# American Neurological Association

Discussion on the paper, by Dr. James J. Putnam and Dr. Edward R. Williams, entitled: "On Tumors Involving the Corpus Callosum." (See December, 1901, number of this Journal.)

DISCUSSION,

Dr. P. C. Knapp passed around a brain stating that the patient from whom it had been removed, before Dr. Knapp had seen him, had been trephined over the right parietal eminence to relieve pressure, a small trephine hole being made about one-half inch in diameter, and the lateral ventricle on this side had been tapped. The symptoms made the diagnosis doubtful as to whether the tumor were cerebellar or prefrontal. He was trephined over the left cerebellum, nothing was found, and he died not long after with increasing coma. At the autopsy an enormous glioma, apparently having its origin in the right caudate nucleus was found. It had occluded the lateral ventricle so that the anterior portion of this ventricle was enormously dilated, and the brain substance covering the ventricle was extremely thin. On opening the brain, a clear, yellowish, translucent clot, the size of a small Bartlett pear, popped out from the interior of the lateral ventricle before the division was made of the tumor in the basal ganglia. The growth apparently extended into the corpus callosum as well, although on that point Dr. Knapp was not quite positive.

Dr. B. Sachs believed it would be well to have discussion on a few points to bring out the result of collected experience in this matter. He was reminded of one point that was brought out forcibly by Dr. Putnam in his paper, and that is the surprising adaptability of the brain to the pressure from tumors. That seemed to him to be the case not only with some of the physical symptoms we are accustomed to associate with brain tumors, but also in part it is the case with regard to the mental symptoms. It is on this point he wished to say a word. He had under observation, and several gentlemen had seen the case with him, a rather unusual case of brain tumor that had now run a course of three and a half years. The variability in the mental symptoms had been most astounding. About three years ago, six months after the onset of the first symptoms, blindness developed and with the onset of the blindness the girl passed into a condition that could properly be described as one of slight apathy with more or less silliness and almost dementia, so that for a year and a half the girl was more or less indifferent to surroundings, had occasional fancies, occasionally recalled things that happened long ago, but for all practical purposes the mental condition was nearly a blank. The tumor had evidently been growing, and yet a most surprising change in her mental condition had occurred, so that at this time the girl is practically as bright as before the first symptoms of brain tumor appeared. In this case Dr. Sachs was very much struck by the extreme variability of the mental symptoms, the recovery from a condition amounting almost to dementia, recovery such as he had not seen in any other case of brain tumor. The first symptoms in this case were those associated with the optic nerve. The girl had a loss of half vision of one field with a central scotoma of the other. These symptoms persisted six months, and although repeated examinations of the eyes were made by competent oculists, there was no optic neuritis or optic atrophy made out. After six months the first signs of optic neuritis appeared, and since that time the complete atrophy has supervened, and of course the blindness is a permanent one.

That led to the second point, whether in other cases of brain tumor the retinal fields have been carefully examined, and whether in the cases in which there is limited and irregular obscuration of the retinal fields, we must almost always suppose that the tumor is near the optic chiasm, or in other words, whether in cases of brain tumor with the tumor at some distance from the optic nerve, partial retinal anesthesias may occur.

The only other point Dr. Sachs insisted upon is that the operations for the relief of pressure in these cases should be encouraged. In the very case Dr. Sachs spoke of the girl was troubled for a number of months by most violent pains in the distribution of the second and third branches of the trigeminus. The tumor is now presenting on the surface over the parietal region and it was doubtful as to whether there was a metastatic growth near the trigeminus or whether the pain was the result of indirect pressure. At all events, a trephine opening was made a little to one side of the tumor as it presented in the parietal region, and the trigeminal pain disappeared very promptly after intracranial pressure had in this way been relieved. This somewhat fortunate result suggests the propriety of making trephine openings in the case of cerebral tumors even if there is no possibility of enucleating the tumor or of reaching it at all. In this case an attempt was made to excise a part of the tumor for histological examination, but the hemorrhage was so great that the girl would unquestionably have died on the table, and knowing that the entire tumor could not possibly be enucleated, any further attempt at enucleation was abandoned.

Dr. P. C. Knapp said in regard to the tumors in the callosum he would speak of two cases involving the callosum—one a girl of fourteen who about four weeks before death had had symptoms of headache, nausea, vomiting, weakness, fever, loss of knee-jerk, tenderness of the neck, and some rigidity. She died at the end of four weeks with the symptoms of an ordinary meningitis. A meningitis of the base and spinal cord was found. At the autopsy, however, a firm tumor about the size of a walnut, was found on the corpus callosum, not, however, involving it deeply.

The second case was a boy of nine, who came to the hospital February 1, 1899, with a history of choreic movements in the right arm for two weeks, and unsteadiness of the right leg, also inability to hold his water and spasm of the right eyelid. It was at first glance suggestive of ordinary chorea, except that there was paresis of the left face. There was no real paralysis anywhere, the fundus was normal, and there was no special headache. Six weeks later he was brought to the hospital, having been attacked four days before with severe headache and vomiting. He was steadily growing worse, and became more and more stupid and unconscious. He moved the left side, the side opposite to the side which had shown the choreic movements, less than he did the right, but he was able to move it to some extent. He was in a critical condition, and was taken into the hospital and died the next day. The brain was found flattened, the ventricles dilated, a tumor 3 cm. in diameter with a hemorrhage in the center was found in the right caudate nucleus. The growth extended into the anterior and outward portion of the corpus callosum.

A third case under observation was suggestive of a growth somewhere on the median portion of the brain, possibly callosal from the fact that the boy in March, before he came under observation, had a sudden attack of paralysis of the right arm which lasted two or three weeks, and wholly disappeared. This was followed by headache and vomiting which continued for a month; then, while steadily improving, paralysis of the left arm developed, more marked in the hand and forearm. With that there was paresis of the left face on voluntary movement, although he could move the face perfectly when he laughed. In addition to that there was optic neuritis and the persistence of headache with occasional vomiting, especially when rising to the erect position. These symptoms are still in existence.

Dr. J. H. Lloyd referred to one point with reference to the symptomatology of these tumors. He thought Dr. Putnam's paper presented evidence of remarkably little cortical irritation in these growths in the neighborhood of the corpus callosum, although there appeared to be very good reason why there should not be more. He was reminded of this in a case which he saw in consultation a few years ago, in which a tumor growing very nearly in the location described by Dr. Putnam, springing from the upper part of the middle of the corpus callosum and involving especially the cortex of the paracentral lobule, gave rise to a curious symptom which Dr. Lloyd had never seen before in brain tumors. He thought, however, it had been described by some writers as a "lock-spasm." This man had no epileptic attacks, and yet the affected arm—the symptoms were entirely unilateral—was involved in such a way that if the patient were asked to take your hand and hold it tightly, he could not let loose; his hand immediately fell into a condition of lock-spasm, so that the fingers had to be pulled off successively. This, of course, was indicative of cortical irritation, and yet it is hard to localize it exactly as the tumor occurred on the mesial aspect of the brain. The point was raised at the time as to the ability of the brain cortex to resist irritation where that is applied with a certain degree of regularity, or gradually, where the cortex is, as it were, trained to resistance. Dr. Lloyd thought at the time this consultation was held, they were making experiments in the University of Pennsylvania on dogs, in which it was proved that by slow and gradual increase of the irritation of the cortex epileptic convulsions were not excited. His idea in this case was that the cortex was gradually habituated to the irritation, and in that way it escaped what we might call epileptic involvement, but, on the other hand, this peculiar spasmodic action which he had described was present. He did not think it is hard to understand the involvement of the arm and leg in these cases, considering how pressure might very readily be made upon the internal capsule, but the absence of cortical irritation in some of these cases had occurred to him as being rather peculiar.

Dr. T. Diller spoke of one very practical point, a point which, perhaps, is more surgical than neurological, and yet which we ought to consider, and that is the question of doing these operations in two stages. Persistent hemorrhage in operations on tumors is most uncommon. It is the custom of Mr. Victor Horsley, who has done so many of these operations, to do them in two stages, that is to say, do the trephining, cutting down to the dura, or, perhaps, opening the dura, and a few days or a week later making the attempt to remove the tumor. Dr. Diller was impressed with this a good deal, because very recently in a patient of his own, operated upon by Dr. Stewart, of Pittsburg, there was an enormous amount of hemorrhage, vicious and persistent, and he was quite sure that the patient would have died had the operation been persisted in. The wound was closed after packing with gauze, and a week later a partially succesful effort to get the tumor out was made, that is to say, a portion of the tumor was removed.

One other point Dr. Diller mentioned, a point referred to by Dr. Sachs, and that is the propriety of doing a trephine operation simply for the relief of headaches. He entirely agreed with Dr. Sachs that such an operation is entirely justifiable. These headaches are sometimes of enormous severity, and may be almost completely relieved for a time; and there is another point to be borne in mind with regard to a simple trephining operation; when we do not encounter the tumor there is only a small danger of death, not nearly so great as where the tumor is found and removal attempted.

Dr. W. G. Spiller said that from three cases he had gotten the impression that tumors growing from the dura are liable to cause a great deal of hemorrhage, if an attempt is made to remove them; one, a case of his own was operated on two or three years ago, and as soon as the trephine opening was made and attempt was made to remove the bone flap, hemorrhage began and was exceedingly profuse. Another was a case of Dr. J. K. Mitchell, operated upon by Dr. Keen, and the third case Dr. Sinkler had reported at this meeting. In all three cases a tumor was found growing from the dura, two, endotheliomata; one, a spindle-cell sarcoma. Dr. Spiller wished to know whether in the experience of others the tumors which grow from the dura are more liable to cause a bloody operation than others. Perhaps Dr. Diller's tumor was one growing from the dura.

Another point is that these tumors growing from the dura will cause intense compression of the brain with relatively few symptoms. In his own case the compression of the brain was intense—in the motor area the cortex was compressed about one and a half inches below the level of the surrounding parts and yet only paresis of the limbs existed.

The point Dr. Sachs had mentioned, trephining for the relief of symptoms, was very interesting. Dr. Spiller had a case with symptoms of cerebellar tumor, but no tumor was found at operation. Since that operation, about two years ago, the symptoms have largely disappeared. It was, perhaps, a case of internal hydrocephalus. Dr. Spiller wished to know whether in the experience of others it is advisable to operate on tumors of the cerebellum. He had seen several cases with symptoms of tumor of the cerebellum. It has seemed advisable to some neurologists not to recommend operation where the symptoms are those of tumor of the cerebellum.

Dr. C. K. Mills thought one point must be borne in mind, in regard to tumors of the callosum, namely, so far as he knew, no case of tumor of the callosum had been reported in which the growth did not involve, and in most cases extensively, the adjoining parts. He did not know, exactly, what is the result as regards this matter in the table prepared by Dr. Putnam and his colleague. From the very nature of the structure, and its size and position, this is likely to be the case; still he believed that something could be contributed to our knowledge of the functions of the callosum by reports of such cases. To illustrate what he meant: in the case of Dr. Sinkler, and also in the case of Dr. Sachs, and, perhaps, in one of the cases of Dr. Putnam, the symptoms seemed to point to a growth in some portion of the prefrontal region. In Dr. Sinkler's case it turned out that the lesion had involved the prefrontal on both sides. It is probable that tumors of the callosum do give mental symptoms of peculiar character, symptoms due to the dissociation of different cerebral activities, not necessarily of symmetrical portions of the brain which are correlated by means of the tracts which pass through the callosum. It is probable that they give a peculiar form of ataxia. In conclusion he called attention to the point that in every case referred to in this discussion the symptoms which were of importance were attributable mostly to the effect of the callosal tumor on other parts.

With regard to the case of Dr. Leszynsky, Dr. Mills said that it illustrates the fact that the tumor, beautifully localized and removed carefully from the motor region, was one which both before and after the operation was characterized by purely motor symptoms.

One word with regard to operation. He had seen a very large number of cases of operation on the brain, especially for brain tumor. His experience extended over many years (from about 1886), and he had been strongly impressed with the fact that both neurologists and surgeons do wrong at the operating table. The surgeon should be more expeditious; lectures should not be delivered at this time; consultations should not be reheld over the operating table, the patient's life during all these procedures being in jeopardy. The growths could sometimes be removed in half the time or in much less time if the strictest attention were paid to nothing but the business in hand.

Dr. G. W. Jacoby emphasized the position Dr. Mills had taken. He though'it was an exceedingly practical one, and the more positively we give expression to that opinion in this Association, the better for our patients, and also for surgeons and neurologists. He believed too much time is lost at these operations, and that the question of minutes is live-saving, and without wishing to cast any imputation upon the surgeons, it is certain that they have grown in the habit of taking plenty of time in operations. In operations upon the brain there is a grave necessity for speed and for reasons entirely aside from that of profuse hemorrhage.

As to the remark Dr. Spiller made in reference to the amount of hemorrhage from dural tumors, Dr. Jacoby said he always expected to have a greater amount of hemorrhage in tumors than in brain operations for any other purpose, so that in all tumor operations he expected a large hemorrhage, but he expected to have a very much greater hemorrhage in dural tumors than in any other tumors, but whether that opinion is an opinion formed from a specific number of cases, or a general impression, he did not know.

Dr. F. W. Langdon said in respect to the question raised by Dr. Spiller as to whether it is advisable or not to operate in cerebellar tumors, he (Dr. Langdon) knew personally of four cases of cerebellar tumors which have recovered. Two in children were operated on by Victor Horsley. Dr. Langdon was present at one operation. Another case was kindly shown to him by Macewen, of Glascow. Eleven days after the operation this patient, a middle-aged man, walked the length of the ward. This man and one of the children were blind and remained so after the operation. The fourth case occurred in Dr. Langdon's practice, and was operated on by Dr. E. W. Walker. The man had had one sharp attack of optic neuritis which had subsided. The symptoms of tumor had been preceded twelve years before by traumatism at the front of the head. A cerebellar cyst containing two ounces of bloody fluid, was evacuated, and the man is now walking around town, spastic in both legs, but has been able to do some light work, and *has good eyesight.* Dr. Langdon contended that if there is a chance of saving vision or a fraction of vision, it is advisable to operate if it is only to relieve pressure. Here was a man who had had one attack of optic neuritis. In such a case delay is very dangerous. It seemed to Dr. Langdon we should take some chances, perhaps more in cerebellar tumors than almost any other, and give the patient the full benefit of any doubt.

Dr. J. Sailer called the attention of the Association to a couple of articles he had occasion to refer to recently, one by Jaboulay, who was obliged to operate on a very vascular tumor of the thyroid, and another by Kehr, who had three cases of cholemia requiring operation as result of gall-stones, in all of which there was excessive tendency to hemorrhage. The surgeons were naturally very much alarmed at the prospect of losing the patients on the table, and employed injections of gelatine for prophylactic purposes. It had occurred to Dr. Sailer that perhaps such injections of gelatine given before the operation, according to the method employed by Kehr and Jaboulay, might possibly be of benefit, and on some occasions might even save life.

Dr. W. Sinkler emphasized what Dr. Mills said in regard to the necessity for more expedition in the performance of these operations. He thought surgeons do not realize the importance of great promptness in completing an operation on the brain.

Dr. J. J. Putnam said he was glad these remarks had been made about operations. He had long been in the habit of recommending operative treatment in cases where recovery was hopeless, and the operation had been repeatedly done in two stages. He had several times used the lumbar puncture with, he thought, considerable benefit in the way of relief of pressure. In the case of one little girl in particular, the cerebro-spinal fluid spurted with force a number of inches into the air, and after a period during which she felt worse, there was a long period of very considerable relief. Dr. Putnam had sometimes wondered whether with the cerebellar tumors we really might not gain more by taking out a large piece of bone over the hemispheres, than by confining the operation to the neighborhood of the cerebellum, where it is necessary to confine oneself to such a small opening. He was glad Dr. Sailer spoke of the matter of the gelatine. The same idea had occurred to him, and he thought it might be a very fruitful one.

Dr. J. J. Putnam showed a patient in connection with the subject of muscular dystrophy, some of the features being so very striking, the enormous size of the deltoid compared with the extremely small size of the upper arm. There was also a double facial paresis. Besides that it was interesting to note the extreme shallowness of the chest, antero-posteriorly, the ribs having all fallen in from failure of the inspiratory muscles. Then the ensuing paralysis was shown in a beautiful manner. The legs were weak and more or less atrophic, but did not show in a gross way anything striking. The patient had had this trouble since about twelve years old, and had kept at work and supported himself in spite of it. A year or two ago Dr. Putnam had seen a patient with enormous thighs, but absolutely atrophic in the legs below the knee, who was making records on the bicycle track, and also working as an expert watch-maker with the extremely feeble hands.

Dr. Putnam passed around two specimens of tumors of the corpus callosum to illustrate his paper.